

WHAT IS CLAIMED IS:

1. A toner, comprising:

an agglomerate of particles comprising at least
5 primary polymer particles and primary colorant
particles, and at least one layer of a particulate
resin coated on a substantial surface portion of said
agglomerate of particles,

wherein at least one of said primary polymer
10 particles and said particulate resin further
comprises a wax, and wherein an outermost layer of
said particulate resin is substantially free of wax.

2. The toner as claimed in claim 1, wherein the
primary polymer particles comprise a wax therein.

15 3. The toner as claimed in claim 1, wherein said at
least one layer of particulate resin is a single layer of
particulate resin substantially free of wax.

4. The toner as claimed in claim 1, wherein there are
at least two layers of said particulate resin.

20 5. The toner as claimed in claim 4, wherein the
primary polymer particles comprise a wax therein.

6. The toner as claimed in claim 4, wherein the
primary polymer particles do not comprise wax therein, and
at least one non-outer layer of the particulate resin also
25 comprises a wax therein.

7. The toner as claimed in claim 1, wherein two layers, an inner layer and an outer layer, of the particulate resin are coated on said agglomerate of particles.

5 8. The toner as claimed in claim 7, wherein the primary polymer particles do not comprise wax therein, the particulate resin in the inner layer comprises a wax therein, and the particulate resin in the outer layer is substantially free of wax.

10 9. The toner as claimed in claim 7, wherein the primary polymer particles comprise a wax therein, the particulate resin in the inner layer also comprises a wax therein, and the particulate resin in the outer layer is substantially free of wax.

15 10. The toner as claimed in claim 1, wherein the primary polymer particles are obtained by emulsion polymerization using a particulate wax as seed.

20 11. The toner as claimed in claim 1, wherein at least one non-outer layer of the particulate resin comprises wax therein and is obtained by emulsion polymerization using particulate wax as seed.

 12. The toner as claimed in claim 10, wherein the particulate wax as seed has a volume-average particle diameter of from 0.01 to 3 μm .

25 13. The toner as claimed in claim 11, wherein the

particulate wax as seed has a volume-average particle diameter of from 0.01 to 3 μm .

14. The toner as claimed in claim 1, wherein the primary polymer particles have a volume-average particle diameter of from 0.02 to 3 μm .

15. The toner as claimed in claim 1, wherein the particulate resin has a volume-average particle diameter of from 0.02 to 3 μm .

16. The toner as claimed in claim 1, wherein the primary polymer particles comprise units from a monomer having a Brönsted acidic group or a Brönsted basic group.

17. The toner as claimed in claim 1, wherein the particulate resin comprises units from a monomer having a Brönsted acidic group or a Brönsted basic group.

18. The toner as claimed in claim 1, wherein the primary polymer particles comprise from 1 to 40 parts by weight of a wax therein based on 100 parts by weight of binder resin in the toner.

19. The toner as claimed in claim 1, wherein the particulate resin of a non-outer layer comprises from 1 to 40 parts by weight of wax therein based on 100 parts by weight of binder resin in the toner.

20. The toner as claimed in claim 1, wherein the primary polymer particles have a THF insolubles content of from 15% to 80% by weight.

21. The toner as claimed in claim 1, wherein the primary polymer particles are crosslinked by incorporation therein of a polyfunctional monomer in an amount of from 0.005 to 5% by weight.

5 22. The toner as claimed in claim 1, wherein the particulate resin has a THF insolubles content of from 5% to 70% by weight.


23. The toner as claimed in claim 1, wherein the particulate resin is crosslinked with a polyfunctional monomer, wherein said polyfunctional monomer is present in
10 an amount of from 0.005 to 5% by weight.

24. The toner as claimed in claim 1, wherein the agglomerate of particles has a volume-average particle diameter of from 2 to 11 μm .

15 25. The toner as claimed in claim 1, wherein the toner has a volume-average particle diameter of from 3 to 12 μm .

26. The toner as claimed in claim 3, wherein the agglomerate of particles and the particulate resin coating
20 the agglomerate are present in a ratio by weight (weight of the agglomerate of particles/weight of the particulate resin) of from 1 to 100.

27. A toner comprising:


25 a binder resin and a particulate wax, wherein the toner has a volume-average particle diameter of from 3 to

12 μm , and a half value width of a number-average particle diameter of particulate wax contained therein, when a cross section of the toner is observed, of 0.06 μm or less, and wherein a distribution of particulate wax having an average particle diameter of 0.01 μm or more throughout the toner particle satisfies the following equation:

$$(A/B)/(C/D) \leq 0.1$$

wherein A is total area of wax particles contained in an outermost layer of the toner particle to a depth of 0.1 μm ;

B is total area of said outermost layer of the toner particle;

C is total area of wax particles contained in a remainder of the toner (at a depth of greater than 0.1 μm from the surface of the toner particle); and

D is total area of said remainder of the toner particle,

wherein all areas are measured as observed in a cross section of said toner through a center point of said toner.

28. The toner as claimed in claim 27, wherein at a depth of 0.1-1 μm from the surface of the toner, a particulate wax having a particle diameter of 0.01 μm or more is present.

29. The toner as claimed in claim 27, wherein the toner has a volume-average particle diameter of from 4 to 10 μm .

5 30. The toner as claimed in claim 27, wherein the particulate wax in the toner has a volume-average particle diameter of from 0.01 to 2 μm .

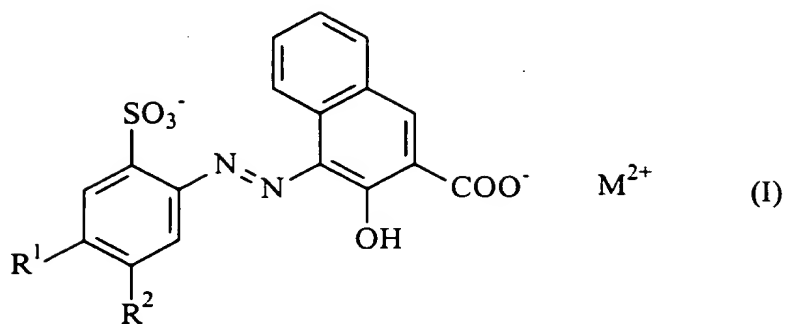
31. The toner as claimed in claim 1, wherein the wax has a melting point of 30 to 100°C.

10 32. The toner as claimed in claim 27, wherein the particulate wax has a melting point of 30 to 100°C.

33. The toner as claimed in claim 1, wherein the wax is present in an amount of from 1 to 35 parts by weight to 100 parts by weight of binder resin.

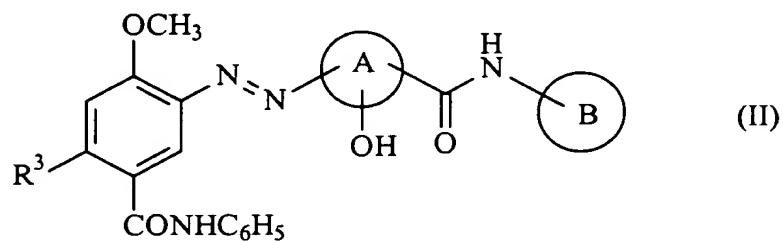
15 34. The toner as claimed in claim 27, wherein the particulate wax is present in an amount of from 1 to 35 parts by weight to 100 parts by weight of binder resin.

35. The toner as claimed in claim 1, wherein the toner comprises a colorant compound represented by the following formula (I):



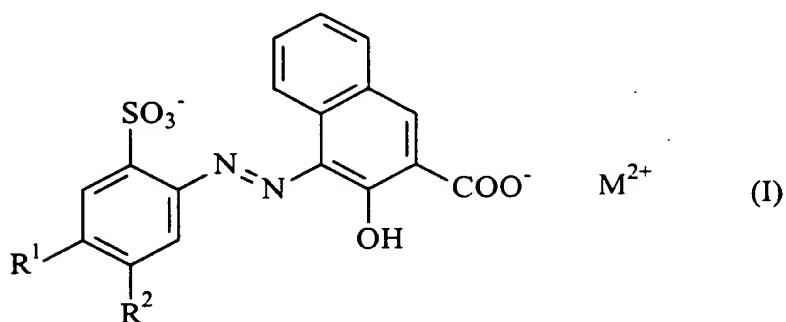
wherein R^1 and R^2 each independently represents a hydrogen atom, an alkyl group or a halogen atom, at least one of R^1 and R^2 is a halogen atom, and M represents Ba, Sr, Mn, Ca or Mg.

36. The toner as claimed in claim 1, wherein the toner comprises a colorant compound represented by the following formula (II):



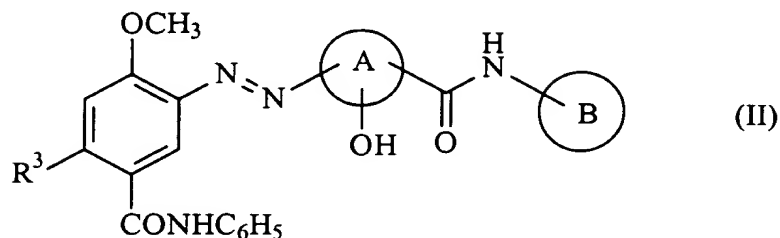
wherein A and B each, independently, represents an aromatic ring which may be substituted, R^3 represents a hydrogen atom, a halogen atom, a nitro group, a cyano group, a hydrocarbon group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, an aminosulfonyl group wherein the nitrogen atom may be substituted or an aminocarbonyl group wherein the nitrogen atom may be substituted.

37. The toner as claimed in claim 27, wherein the toner comprises a colorant compound represented by the following formula (I):



wherein R^1 and R^2 each independently represents a hydrogen atom, an alkyl group or a halogen atom, at least one of R^1 and R^2 is a halogen atom, and M represents Ba, Sr, Mn, Ca or Mg.

38. The toner as claimed in claim 27, wherein the toner comprises a colorant compound represented by the following formula (II):



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10 wherein A and B each, independently, represents an aromatic ring which may be substituted, R³ represents a hydrogen atom, a halogen atom, a nitro group, a cyano group, a hydrocarbon group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, an aminosulfonyl group
 15 wherein the nitrogen atom may be substituted or an aminocarbonyl group wherein the nitrogen atom may be substituted.

39. The toner as claimed in claim 1, wherein the toner is negatively charged.

20 40. The toner as claimed in claim 27, wherein the toner is negatively charged.

41. The toner as claimed in claim 1, wherein the toner has a ratio of volume-average particle diameter to number-average particle diameter (volume-average particle diameter/number-average particle diameter) of from 1 to 1.25.

42. The toner as claimed in claim 27, wherein the toner has a ratio of volume-average particle diameter to number-average particle diameter (volume-average particle diameter/number-average particle diameter) of from 1 to 1.25.

43. The toner as claimed in claim 1, wherein the toner has a 50% circular degree of from 0.95 to 1 .

44. The toner as claimed in claim 27, wherein the toner has a 50% circular degree of from 0.95 to 1 .

45. The toner as claimed in claim 1, wherein the toner has a volume-average particle diameter of from 7 to 10 μm , and a proportion of the toner having a particle diameter of 5 μm or less is 10% by volume or less.

46. The toner as claimed in claim 1, wherein the toner has a volume-average particle diameter of from 7 to 10 μm , and a proportion of the toner having a particle diameter of 15 μm or more is 5% by volume or less.

47. A process for producing a toner comprising:
agglomerating at least primary polymer particles and
primary colorant particles to form an agglomerate of
particles, then coating at least a substantial surface
5 portion of said agglomerate of particles with at least one
layer of a particulate resin , wherein the primary polymer
particles are obtained by seed emulsion polymerization of a
monomer mixture in the presence of a particulate wax, and
an outermost layer of the particulate resin is
10 substantially free of wax.

48. The process as claimed in claim 47, wherein
between said agglomerating step and said coating of
particulate resin step, said agglomerate of particles is
coated with a layer of a particulate charge control agent.

15 49. The process as claimed in claim 47, wherein the
particulate resin has a volume-average particle diameter of
from 0.02 to 3 μm .

50. The process as claimed in claim 47, wherein said
coating step is performed at least twice to provide at
20 least two layers of particulate resin on said agglomerate
of particles, wherein the particulate resin of an innermost
layer is obtained by seed emulsion polymerization of a
monomer mixture in the presence of a particulate wax.

51. The process as claimed in claim 47, wherein the
25 primary polymer particles are obtained by seed emulsion

polymerization of a monomer mixture in the presence of a particulate wax, and said particulate resin is substantially free of wax.

52. The process as claimed in claim 47, wherein two
5 layers, an inner layer and an outer layer, of particulate resin are coated in said coating step, wherein the primary polymer particles are obtained by seed emulsion polymerization of a monomer mixture in the presence of a particulate wax, wherein the particulate resin of the inner
10 layer is obtained by seed emulsion polymerization of a monomer mixture in the presence of a particulate wax, and the particulate resin of the outer layer is substantially free of wax.

53. The process as claimed in claim 47, wherein two
15 layers, an inner layer and an outer layer, of particulate resin are coated on the agglomerate of particles, wherein the primary polymer particles are substantially free of wax, the particulate resin of the inner layer is obtained by seed emulsion polymerization of a monomer mixture in the
20 presence of a particulate wax, and the particulate resin of the outer layer is substantially free of wax.

54. The process as claimed in claim 47, wherein the primary polymer particles are obtained from a monomer mixture comprising a compound having a Brönsted acidic
25 group or a Brönsted basic group.

55. The process as claimed in claim 51, wherein after said coating step is an aging step wherein said agglomerate of particles and particulate resin substantially free of wax are fusion bonded to one another by heating at a
5 temperature range of from a glass transition temperature of a binder resin constituting the agglomerate of particles (Tg) to Tg +80°C.

56. The process as claimed in claim 52, wherein said inner layer and said outer layer are coated onto said
10 agglomerate of particles prior to an aging step, then after said coating an aging step is performed to fusion bond the agglomerate of particles and two layers of particulate resin to each other, by heating at a
15 temperature range of from a glass transition temperature of a binder resin constituting the agglomerate of particles (Tg) to (Tg +80°C).